LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

IWM Consulting Group
7428 Rockville Road
Indianapolis, IN 46214
ATTN: Brad Gentry

September 25, 2018

SUBJECT: Former Amphenol Facility, Data Validation

Dear Mr. Gentry,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on September 19, 2018. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #43160:

SDG #	Fraction:
10447725, 10447804	Volatiles

The data validation was performed under Level III & IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Sewer Gas Vapor Intrusion Investigation Work Plan, Franklin Power Products, Inc./Amphenol Corporation, Franklin, Indiana; September 2018
- USEPA National Functional Guidelines for Organic Superfund Methods Data Review; January 2017

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
Project Manager/Senior Chemist

104 pages-EM 1 WEEK TAT R1 (added B-C) Attachment 1

90/10

LDC #43160 (IWM Consulting Group - Indianapolis, IN / Former Amphenol Facility)

LDC	SDG#	DATE REC'D	(3) DATE DUE	(9) VOA (TO-15/SIM)		(9) VOA (8260B)																													
Matrix:	Air/Water/Soil			A	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	10447725	09/19/18	09/26/18	14	0	-	-																												
A	10447725	09/19/18	09/26/18	2	0	-	-																												
B	10447804	09/19/18	09/26/18	13	0	-	-																												
B	10447804	09/19/18	09/26/18	1	0	-	-																												
C	50205666	09/19/18	09/26/18	-	-	7	0																												
C	50205666	09/19/18	09/26/18	-	-	1	0																												
Total	T/PG			30	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38

Shaded cells indicate Level IV validation (all other cells are Level III validation). These counts do not include MS, MSD, Dups.

L:\IWM\Former Amphenol\43160ST.wpd

LDC Report# 43160A48

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Former Amphenol Facility

LDC Report Date: September 24, 2018

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: Pace Analytical Services, LLC.

Sample Delivery Group (SDG): 10447725

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MH 250056**	10447725001**	Air	09/14/18
MH 250051 Grab	10447725003	Air	09/14/18
MH 250050	10447725005	Air	09/14/18
MH 250040	10447725007	Air	09/14/18
MH 250030	10447725009	Air	09/14/18
MH 250020**	10447725011**	Air	09/14/18
MH 250010	10447725013	Air	09/14/18
MH 250055	10447725015	Air	09/14/18
MH 250054	10447725017	Air	09/14/18
MH 250053 B	10447725019	Air	09/14/18
MH-250053	10447725021	Air	09/14/18
FD-1	10447725023	Air	09/14/18
MH 250052	10447725025	Air	09/14/18
MH 250090	10447725027	Air	09/14/18
MH 250080	10447725029	Air	09/14/18
FD-2	10447725031	Air	09/14/18
MH 250080DUP	10447725029DUP	Air	09/14/18
FD-2DUP	10447725031DUP	Air	09/14/18

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Sewer Gas Vapor Intrusion Investigation Work Plan, Franklin Power Products, Inc./Amphenol Corporation, Franklin, Indiana (September 2018) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method TO-15 and EPA Method TO-15 in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound for analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

The canisters were properly pressurized and handled.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 24 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 30.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

Canister blank analyses were performed for every sample canister. No contaminants were found in the canister blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

Samples MH 250054 and FD-1 and samples MH 250080 and FD-2 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/m^3)		RPD
	MH 250054	FD-1	
cis-1,2-Dichloroethene	0.30	0.24	22
Methylene chloride	11.3	11.5	2
Tetrachloroethene	2.5	2.6	4
1,1,1-Trichloroethane	0.14	0.12	15
Trichloroethene	0.58	0.50	15

Compound	Concentration (ug/m^3)		RPD
	MH 250080	FD-2	
1,1-Dichloroethane	0.22	0.083U	Not calculable
1,2-Dichloroethane	1.6	1.5	6
Methylene chloride	13.1	19.6	40
Tetrachloroethene	12.7	12.2	4
1,1,1-Trichloroethane	23.9	22.9	4
Trichloroethene	68.2	65.0	5

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIV. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Former Amphenol Facility
Volatiles - Data Qualification Summary - SDG 10447725

No Sample Data Qualified in this SDG

Former Amphenol Facility
Volatiles - Laboratory Blank Data Qualification Summary - SDG 10447725

No Sample Data Qualified in this SDG

Former Amphenol Facility
Volatiles - Field Blank Data Qualification Summary - SDG 10447725

No Sample Data Qualified in this SDG

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250056 **Lab ID: 10447725001** Collected: 09/14/18 09:47 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.083	2.02		09/17/18 18:51	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.083	2.02		09/17/18 18:51	107-06-2	
cis-1,2-Dichloroethene	**102**	ug/m3	0.081	2.02		09/17/18 18:51	156-59-2	
trans-1,2-Dichloroethene	**0.38**	ug/m3	0.081	2.02		09/17/18 18:51	156-60-5	
Methylene Chloride	**13.9**	ug/m3	7.1	2.02		09/17/18 18:51	75-09-2	
Tetrachloroethene	**225**	ug/m3	0.14	2.02		09/17/18 18:51	127-18-4	
1,1,1-Trichloroethane	**32.0**	ug/m3	0.11	2.02		09/17/18 18:51	71-55-6	
Trichloroethene	**91.0**	ug/m3	0.11	2.02		09/17/18 18:51	79-01-6	
Vinyl chloride	ND	ug/m3	0.053	2.02		09/17/18 18:51	75-01-4	

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250051 Grab **Lab ID: 10447725003** Collected: 09/14/18 10:21 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.083	2.02		09/17/18 19:23	75-34-3	
1,2-Dichloroethane	**0.50**	ug/m3	0.083	2.02		09/17/18 19:23	107-06-2	
cis-1,2-Dichloroethene	**0.17**	ug/m3	0.081	2.02		09/17/18 19:23	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.081	2.02		09/17/18 19:23	156-60-5	
Methylene Chloride	**27.5**	ug/m3	7.1	2.02		09/17/18 19:23	75-09-2	
Tetrachloroethene	**3.7**	ug/m3	0.14	2.02		09/17/18 19:23	127-18-4	
1,1,1-Trichloroethane	**0.19**	ug/m3	0.11	2.02		09/17/18 19:23	71-55-6	
Trichloroethene	**0.34**	ug/m3	0.11	2.02		09/17/18 19:23	79-01-6	
Vinyl chloride	ND	ug/m3	0.053	2.02		09/17/18 19:23	75-01-4	

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250050 **Lab ID: 10447725005** Collected: 09/14/18 11:12 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**5.4**	ug/m3	0.086	2.1		09/17/18 19:58	75-34-3	
1,2-Dichloroethane	**3.8**	ug/m3	0.086	2.1		09/17/18 19:58	107-06-2	
cis-1,2-Dichloroethene	**25.6**	ug/m3	0.085	2.1		09/17/18 19:58	156-59-2	
trans-1,2-Dichloroethene	**0.25**	ug/m3	0.085	2.1		09/17/18 19:58	156-60-5	
Methylene Chloride	**23.2**	ug/m3	7.4	2.1		09/17/18 19:58	75-09-2	
Tetrachloroethene	**651**	ug/m3	24.3	35.3		09/18/18 11:26	127-18-4	
1,1,1-Trichloroethane	**64.8**	ug/m3	0.12	2.1		09/17/18 19:58	71-55-6	
Trichloroethene	**272**	ug/m3	0.11	2.1		09/17/18 19:58	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/17/18 19:58	75-01-4	

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250040 **Lab ID: 10447725007** Collected: 09/14/18 11:40 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**12.0**	ug/m3	0.088	2.15		09/17/18 20:30	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.088	2.15		09/17/18 20:30	107-06-2	
cis-1,2-Dichloroethene	**33.1**	ug/m3	0.087	2.15		09/17/18 20:30	156-59-2	
trans-1,2-Dichloroethene	**0.86**	ug/m3	0.087	2.15		09/17/18 20:30	156-60-5	
Methylene Chloride	**17.7**	ug/m3	7.6	2.15		09/17/18 20:30	75-09-2	
Tetrachloroethene	**442**	ug/m3	0.15	2.15		09/17/18 20:30	127-18-4	
1,1,1-Trichloroethane	**105**	ug/m3	0.12	2.15		09/17/18 20:30	71-55-6	
Trichloroethene	**379**	ug/m3	11.7	21.5		09/18/18 12:37	79-01-6	
Vinyl chloride	ND	ug/m3	0.056	2.15		09/17/18 20:30	75-01-4	

9/09/18

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250030 **Lab ID: 10447725009** Collected: 09/14/18 12:07 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**14.1**	ug/m3	0.088	2.15		09/17/18 21:03	75-34-3	
1,2-Dichloroethane	**6.7**	ug/m3	0.088	2.15		09/17/18 21:03	107-06-2	
cis-1,2-Dichloroethene	**38.4**	ug/m3	0.087	2.15		09/17/18 21:03	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.087	2.15		09/17/18 21:03	156-60-5	
Methylene Chloride	**16.9**	ug/m3	7.6	2.15		09/17/18 21:03	75-09-2	
Tetrachloroethene	**466**	ug/m3	0.15	2.15		09/17/18 21:03	127-18-4	
1,1,1-Trichloroethane	**117**	ug/m3	0.12	2.15		09/17/18 21:03	71-55-6	
Trichloroethene	**480**	ug/m3	11.7	21.5		09/18/18 12:02	79-01-6	
Vinyl chloride	**1.0**	ug/m3	0.056	2.15		09/17/18 21:03	75-01-4	

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250020 **Lab ID: 10447725011** Collected: 09/14/18 12:34 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**22.2**	ug/m3	0.083	2.02		09/17/18 21:36	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.083	2.02		09/17/18 21:36	107-06-2	
cis-1,2-Dichloroethene	**44.6**	ug/m3	0.081	2.02		09/17/18 21:36	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.081	2.02		09/17/18 21:36	156-60-5	
Methylene Chloride	**23.6**	ug/m3	7.1	2.02		09/17/18 21:36	75-09-2	
Tetrachloroethene	**211**	ug/m3	27.8	40.4		09/18/18 13:12	127-18-4	
1,1,1-Trichloroethane	**242**	ug/m3	0.11	2.02		09/17/18 21:36	71-55-6	
Trichloroethene	**228**	ug/m3	22.1	40.4		09/18/18 13:12	79-01-6	
Vinyl chloride	**2.6**	ug/m3	0.053	2.02		09/17/18 21:36	75-01-4	

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250010 **Lab ID: 10447725013** Collected: 09/14/18 13:01 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**28.6**	ug/m3	0.085	2.06		09/17/18 22:09	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.085	2.06		09/17/18 22:09	107-06-2	
cis-1,2-Dichloroethene	**44.9**	ug/m3	0.083	2.06		09/17/18 22:09	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.083	2.06		09/17/18 22:09	156-60-5	
Methylene Chloride	**29.3**	ug/m3	7.3	2.06		09/17/18 22:09	75-09-2	
Tetrachloroethene	**1030**	ug/m3	28.4	41.2		09/18/18 13:47	127-18-4	
1,1,1-Trichloroethane	**307**	ug/m3	0.11	2.06		09/17/18 22:09	71-55-6	
Trichloroethene	**1290**	ug/m3	22.5	41.2		09/18/18 13:47	79-01-6	
Vinyl chloride	**3.0**	ug/m3	0.054	2.06		09/17/18 22:09	75-01-4	

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250055 **Lab ID: 10447725015** Collected: 09/14/18 14:38 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**7.0**	ug/m3	0.086	2.1		09/17/18 22:41	75-34-3	
1,2-Dichloroethane	**2.0**	ug/m3	0.086	2.1		09/17/18 22:41	107-06-2	
cis-1,2-Dichloroethene	**115**	ug/m3	0.085	2.1		09/17/18 22:41	156-59-2	
trans-1,2-Dichloroethene	**0.41**	ug/m3	0.085	2.1		09/17/18 22:41	156-60-5	
Methylene Chloride	**12.8**	ug/m3	7.4	2.1		09/17/18 22:41	75-09-2	
Tetrachloroethene	**260**	ug/m3	0.14	2.1		09/17/18 22:41	127-18-4	
1,1,1-Trichloroethane	**33.7**	ug/m3	0.12	2.1		09/17/18 22:41	71-55-6	
Trichloroethene	**111**	ug/m3	0.11	2.1		09/17/18 22:41	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/17/18 22:41	75-01-4	

9/20/18

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250054 **Lab ID: 10447725017** Collected: 09/14/18 15:13 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.086	2.1		09/17/18 23:14	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.086	2.1		09/17/18 23:14	107-06-2	
cis-1,2-Dichloroethene	**0.30**	ug/m3	0.085	2.1		09/17/18 23:14	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/17/18 23:14	156-60-5	
Methylene Chloride	**11.3**	ug/m3	7.4	2.1		09/17/18 23:14	75-09-2	
Tetrachloroethene	**2.5**	ug/m3	0.14	2.1		09/17/18 23:14	127-18-4	
1,1,1-Trichloroethane	**0.14**	ug/m3	0.12	2.1		09/17/18 23:14	71-55-6	
Trichloroethene	**0.58**	ug/m3	0.11	2.1		09/17/18 23:14	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/17/18 23:14	75-01-4	

9/24/18

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250053 B **Lab ID: 10447725019** Collected: 09/14/18 15:40 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.086	2.1		09/17/18 23:46	75-34-3	
1,2-Dichloroethane	**0.39**	ug/m3	0.086	2.1		09/17/18 23:46	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/17/18 23:46	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/17/18 23:46	156-60-5	
Methylene Chloride	**14.1**	ug/m3	7.4	2.1		09/17/18 23:46	75-09-2	
Tetrachloroethene	**12.9**	ug/m3	0.14	2.1		09/17/18 23:46	127-18-4	
1,1,1-Trichloroethane	**1.7**	ug/m3	0.12	2.1		09/17/18 23:46	71-55-6	
Trichloroethene	**2.2**	ug/m3	0.11	2.1		09/17/18 23:46	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/17/18 23:46	75-01-4	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250053 **Lab ID: 10447725021** Collected: 09/14/18 16:05 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.090	2.19		09/18/18 00:20	75-34-3	
1,2-Dichloroethane	**0.58**	ug/m3	0.090	2.19		09/18/18 00:20	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.088	2.19		09/18/18 00:20	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.088	2.19		09/18/18 00:20	156-60-5	
Methylene Chloride	**15.1**	ug/m3	7.7	2.19		09/18/18 00:20	75-09-2	
Tetrachloroethene	**9.6**	ug/m3	0.15	2.19		09/18/18 00:20	127-18-4	
1,1,1-Trichloroethane	**3.5**	ug/m3	0.12	2.19		09/18/18 00:20	71-55-6	
Trichloroethene	**17.6**	ug/m3	0.12	2.19		09/18/18 00:20	79-01-6	
Vinyl chloride	ND	ug/m3	0.057	2.19		09/18/18 00:20	75-01-4	

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: FD-1 **Lab ID: 10447725023** Collected: 09/14/18 15:13 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 00:52	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 00:52	107-06-2	
cis-1,2-Dichloroethene	**0.24**	ug/m3	0.085	2.1		09/18/18 00:52	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 00:52	156-60-5	
Methylene Chloride	**11.5**	ug/m3	7.4	2.1		09/18/18 00:52	75-09-2	
Tetrachloroethene	**2.6**	ug/m3	0.14	2.1		09/18/18 00:52	127-18-4	
1,1,1-Trichloroethane	**0.12**	ug/m3	0.12	2.1		09/18/18 00:52	71-55-6	
Trichloroethene	**0.50**	ug/m3	0.11	2.1		09/18/18 00:52	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/18/18 00:52	75-01-4	

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250052 **Lab ID: 10447725025** Collected: 09/14/18 16:36 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**1.2**	ug/m3	0.15	3.68		09/18/18 12:33	75-34-3	
1,2-Dichloroethane	**1.3**	ug/m3	0.15	3.68		09/18/18 12:33	107-06-2	
cis-1,2-Dichloroethene	**18.5**	ug/m3	0.15	3.68		09/18/18 12:33	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.15	3.68		09/18/18 12:33	156-60-5	
Methylene Chloride	**412**	ug/m3	13.0	3.68		09/18/18 12:33	75-09-2	
Tetrachloroethene	**268**	ug/m3	0.25	3.68		09/18/18 12:33	127-18-4	
1,1,1-Trichloroethane	**15.3**	ug/m3	0.20	3.68		09/18/18 12:33	71-55-6	
Trichloroethene	**49.3**	ug/m3	0.20	3.68		09/18/18 12:33	79-01-6	
Vinyl chloride	ND	ug/m3	0.096	3.68		09/18/18 12:33	75-01-4	

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250090 **Lab ID: 10447725027** Collected: 09/14/18 17:11 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 02:00	75-34-3	
1,2-Dichloroethane	**2.0**	ug/m3	0.086	2.1		09/18/18 02:00	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 02:00	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 02:00	156-60-5	
Methylene Chloride	**11.0**	ug/m3	7.4	2.1		09/18/18 02:00	75-09-2	
Tetrachloroethene	**24.0**	ug/m3	0.14	2.1		09/18/18 02:00	127-18-4	
1,1,1-Trichloroethane	**34.0**	ug/m3	0.12	2.1		09/18/18 02:00	71-55-6	
Trichloroethene	**102**	ug/m3	0.11	2.1		09/18/18 02:00	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/18/18 02:00	75-01-4	

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: MH 250080 **Lab ID: 10447725029** Collected: 09/14/18 17:44 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**0.22**	ug/m3	0.086	2.1		09/18/18 02:32	75-34-3	
1,2-Dichloroethane	**1.6**	ug/m3	0.086	2.1		09/18/18 02:32	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 02:32	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 02:32	156-60-5	
Methylene Chloride	**13.1**	ug/m3	7.4	2.1		09/18/18 02:32	75-09-2	
Tetrachloroethene	**12.7**	ug/m3	0.14	2.1		09/18/18 02:32	127-18-4	
1,1,1-Trichloroethane	**23.9**	ug/m3	0.12	2.1		09/18/18 02:32	71-55-6	
Trichloroethene	**68.2**	ug/m3	0.11	2.1		09/18/18 02:32	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/18/18 02:32	75-01-4	

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ANALYTICAL RESULTS

Project: IN.AMP18.01 Former Amphenol Fa
Pace Project No.: 10447725

Sample: FD-2 **Lab ID: 10447725031** Collected: 09/14/18 17:44 Received: 09/17/18 10:05 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.083	2.02		09/18/18 03:39	75-34-3	
1,2-Dichloroethane	**1.5**	ug/m3	0.083	2.02		09/18/18 03:39	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.081	2.02		09/18/18 03:39	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.081	2.02		09/18/18 03:39	156-60-5	
Methylene Chloride	**19.6**	ug/m3	7.1	2.02		09/18/18 03:39	75-09-2	
Tetrachloroethene	**12.2**	ug/m3	0.14	2.02		09/18/18 03:39	127-18-4	
1,1,1-Trichloroethane	**22.9**	ug/m3	0.11	2.02		09/18/18 03:39	71-55-6	
Trichloroethene	**65.0**	ug/m3	0.11	2.02		09/18/18 03:39	79-01-6	
Vinyl chloride	ND	ug/m3	0.053	2.02		09/18/18 03:39	75-01-4	

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REPORT OF LABORATORY ANALYSIS

LDC #: 43160A48

VALIDATION COMPLETENESS WORKSHEET

SDG #: 10447725 Level III/IV

Laboratory: Pace Analytical Services, LLC

Date: 9/20/18

Page: 1 of 2

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA Method TO-15) / TO-15 SIM

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	r² %RSD ≤ 30 ICV ≤ 30
IV.	Continuing calibration	A	CCV ≤ 30
V.	Laboratory Blanks/Canister Blanks / per canister	A/A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates MMP	N/A	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D = 9, 12 15, 16
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level III validation.
XIII.	Target compound identification	A	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Level IV validation

	Client ID	Lab ID	Matrix	Date
1	MH 250056** I, L, PPP, C (SIM) All others (full scan	10447725001**	Air	09/14/18
2	MH 250051 Grab	10447725003	Air	09/14/18
3	MH 250050	10447725005	Air	09/14/18
4	MH 250040	10447725007	Air	09/14/18
5	MH 250030	10447725009	Air	09/14/18
6	MH 250020** L, PPP (SIM) all others full scan	10447725011**	Air	09/14/18
7	MH 250010	10447725013	Air	09/14/18
8	MH 250055	10447725015	Air	09/14/18
9	MH 250054 D	10447725017	Air	09/14/18
10	MH 250053 B	10447725019	Air	09/14/18
11	MH-250053** I, L, QQQ, PPP, C (SIM) all others full scan	10447725021**	Air	09/14/18
12	FD-1 D	10447725023	Air	09/14/18
13 2	MH 250052	10447725025	Air	09/14/18

LDC #: 43160A48 **VALIDATION COMPLETENESS WORKSHEET** Date: 9/20/18
SDG #: 10447725 Level III/IV Page: 2 of 2
Laboratory: Pace Analytical Services, LLC Reviewer:
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA Method TO-15)

	Client ID	Lab ID	Matrix	Date
14	MH 250090	10447725027	Air	09/14/18
15	MH 250080 D_1	10447725029	Air	09/14/18
16	FD-2 D_1	10447725031	Air	09/14/18
17	MH 250080DUP	10447725029DUP	Air	09/14/18
18	FD-2DUP	10447725031DUP	Air	09/14/18
19				
20				
21				
22				
23				

Notes:

-	3057658-MB						
-	3058152-MB						

LDC #: 43160A48

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: FT
2nd Reviewer:

Method: Volatiles (EPA Method TO-15)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was canister pressure criteria met?	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 24 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30%?	✓			
IIIb. Initial calibration verificattion				
Was an initial calibration verification standard analyzed after every ICAL for each instrument?	✓			
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 24 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?	✓			
V. Laboratory Blanks/Canister Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed at least once every 24 hours for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
Was a canister blank analyzed for every canister?	✓			
Was there contamination in the canister blanks? If yes, please see the Canister Blanks validation completeness worksheet.		✓		
VI. Field Blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	
VII. Surrogate spikes (Optional)				
Were all surrogate percent recoveries (%R) within QC limits?			✓	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VIII. Laboratory Duplicate				
Was a laboratory duplicate analyzed for this SDG?			✓	
Were the relative percent differences (RPD) within the QC limits?			✓	

LDC #: 43160A48

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: FT
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Internal standards				
Were internal standard area counts within ± 40% from the associated calibration standard?	✓			
Were retention times within ± 20.0 seconds from the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC#: 43160A48

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: F
2nd Reviewer: F

METHOD: GCMS TO15

Compound	Concentration (ug/m3)		RPD
	9	12	
QQQ	0.30	0.24	22
E	11.3	11.5	2
AA	2.5	2.6	4
N	0.14	0.12	15
S	0.58	0.50	15

Compound	Concentration (ug/m3)		RPD
	15	16	
I	0.22	0.083U	NC
L	1.6	1.5	6
E	13.1	19.6	40
AA	12.7	12.2	4
N	23.9	22.9	4
S	68.2	65.0	5

LDC#: 43160448
SDG#: see cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

Method: TO15 SIM

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
9/17/2018	TO15 Full scan	Tetrachloroethane	1	0.001809459	0.01
			2	0.013576014	0.02
			3	0.036674865	0.05
			4	0.071317876	0.10
			5	0.656550255	1.00
			6	1.318336362	2.00
			7	1.936396078	3.00

Regression Output		*Reported*
Constant	*0.003800*	*0.000840*
Std Err of Y Est		
R Squared	*0.999838*	*0.999950*
Degrees of Freedom		
X Coefficient(s)	*0.648554*	*0.658250*
Std Err of Coef.		
Correlation Coefficient	*0.999919*	
Coefficient of Determination (r^2)	*0.999838*	*0.999950*

LDC#: 43160448
SDG#: see cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: FD
2nd Reviewer: JL

Method: TO15 SIM

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
9/16/2018	TO15 SIM	1,2 Dichloroethane	1	0.000326358	0.0005
			2	0.000448966	0.001
			3	0.001088638	0.002
			4	0.002757794	0.005
			5	0.005762472	0.01
			6	0.011398068	0.02
			7	0.017350489	0.03

Regression Output		*Reported*
Constant	*-0.000072*	*-0.000070*
Std Err of Y Est		
R Squared	*0.999858*	*0.999860*
Degrees of Freedom		
X Coefficient(s)	*0.578656*	*0.578660*
Std Err of Coef.		
Correlation Coefficient	*0.999929*	
Coefficient of Determination (r^2)	*0.999858*	*0.999860*

LDC #: 43160A48

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA Method TO-15)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported	Recalculated	Reported	Recalculated	Reported	Recalculated
				RRF (1.0 std)	RRF (1.0 std)	Average RRF (initial)	Average RRF (initial)	%RSD	%RSD
1	ICAL full scan	9/17/18	QQQ	0.34341	0.34341	0.30365	0.30365	24.10859	24.1086
2	ICAL Full scan	9/15/18	S	0.56299	0.56299	0.52337	052337	9.98568	9.98568
			AA'	1.03615	1.03615	0.92696	092676	14.46210	14.46210
3									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43160A48

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA TO-15)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	ccv SIM	9/17/18	1,2 - DCΔ	0.100	0.10542	0.10542	5.41911	5.42
	0807							
2	ccv Full	9/18/18	S	0.52337	0.53775	0.53775	2.74833	2.74833
	0809		AΔ	0.92676	0.89362	0.89362	3.59600	3.59600
3								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43160A48

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: EJ
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA Method TO-15)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. #1 , QQQ (TO15- Full scan)

Conc. = $\frac{(64432)(10)(2.020)(96.94)}{(169528)(0.30365)(24.0)}$

= 102.14 ug/m3

#	Sample ID	Compound	Reported Concentration (ug/m3)	Calculated Concentration (ug/m3)	Qualification
	#1	QQQ	102	102.14	
	#11	1,2-DCA (SIM)			
	$= \left(\left[\frac{2305}{635229}\right] + 0.00007\right)(10)(2.190)(98.95)$				
		$(0.578566)(24)$			
		$= 0.577$ ug/m3			
		lab reported 0.58 ug/m3			

LDC Report# 43160B48

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Former Amphenol Facility

LDC Report Date: September 24, 2018

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: Pace Analytical Services, LLC.

Sample Delivery Group (SDG): 10447804

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MH SS-East 1**	10447804001**	Air	09/17/18
MH SS-East 2	10447804002	Air	09/17/18
MH 250041	10447804003	Air	09/15/18
MH 250042	10447804004	Air	09/15/18
MH 250043	10447804005	Air	09/15/18
MH 250051 8 Hour	10447804006	Air	09/14/18
MH 250070	10447804007	Air	09/15/18
MH 250071	10447804008	Air	09/15/18
MH 250072	10447804009	Air	09/15/18
MH 250100	10447804010	Air	09/15/18
MH 250120	10447804011	Air	09/15/18
MH 250130	10447804012	Air	09/15/18
MH SS-North	10447804013	Air	09/17/18
MH SS-South	10447804014	Air	09/17/18
MH 250051 8 HourDUP	10447804006DUP	Air	09/14/18

**Indicates sample underwent Level IV validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Sewer Gas Vapor Intrusion Investigation Work Plan, Franklin Power Products, Inc./Amphenol Corporation, Franklin, Indiana (September 2018) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method TO-15 and EPA Method TO-15 in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound for analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

The canisters were properly pressurized and handled.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 24 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 30.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

Canister blank analyses were performed for every sample canister. No contaminants were found in the canister blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were not required by the method.

VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XIV. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Former Amphenol Facility
Volatiles - Data Qualification Summary - SDG 10447804

No Sample Data Qualified in this SDG

Former Amphenol Facility
Volatiles - Laboratory Blank Data Qualification Summary - SDG 10447804

No Sample Data Qualified in this SDG

Former Amphenol Facility
Volatiles - Field Blank Data Qualification Summary - SDG 10447804

No Sample Data Qualified in this SDG

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH SS- East 1 **Lab ID: 10447804001** Collected: 09/17/18 10:11 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**0.73**	ug/m3	0.086	2.1		09/18/18 20:24	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 20:24	107-06-2	
cis-1,2-Dichloroethene	**0.53**	ug/m3	0.085	2.1		09/18/18 20:24	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 20:24	156-60-5	
Methylene Chloride	**9.8**	ug/m3	7.4	2.1		09/18/18 20:24	75-09-2	
Tetrachloroethene	**71.5**	ug/m3	0.14	2.1		09/18/18 20:24	127-18-4	
1,1,1-Trichloroethane	**7.7**	ug/m3	0.12	2.1		09/18/18 20:24	71-55-6	
Trichloroethene	**14.6**	ug/m3	0.11	2.1		09/18/18 20:24	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/18/18 20:24	75-01-4	

M 09/24/18

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH SS- East 2 **Lab ID: 10447804002** Collected: 09/17/18 10:38 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**0.12**	ug/m3	0.092	2.24		09/18/18 20:57	75-34-3	
1,2-Dichloroethane	**0.12**	ug/m3	0.092	2.24		09/18/18 20:57	107-06-2	
cis-1,2-Dichloroethene	**0.12**	ug/m3	0.090	2.24		09/18/18 20:57	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.090	2.24		09/18/18 20:57	156-60-5	
Methylene Chloride	**11.4**	ug/m3	7.9	2.24		09/18/18 20:57	75-09-2	
Tetrachloroethene	**10.6**	ug/m3	0.15	2.24		09/18/18 20:57	127-18-4	
1,1,1-Trichloroethane	**1.0**	ug/m3	0.12	2.24		09/18/18 20:57	71-55-6	
Trichloroethene	**2.7**	ug/m3	0.12	2.24		09/18/18 20:57	79-01-6	
Vinyl chloride	ND	ug/m3	0.058	2.24		09/18/18 20:57	75-01-4	

R 093418

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH 250041 **Lab ID: 10447804003** Collected: 09/15/18 09:26 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**0.22**	ug/m3	0.086	2.1		09/18/18 22:35	75-34-3	
1,2-Dichloroethane	**0.21**	ug/m3	0.086	2.1		09/18/18 22:35	107-06-2	
cis-1,2-Dichloroethene	**0.34**	ug/m3	0.085	2.1		09/18/18 22:35	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 22:35	156-60-5	
Methylene Chloride	**20.6**	ug/m3	7.4	2.1		09/18/18 22:35	75-09-2	
Tetrachloroethene	**6.9**	ug/m3	0.14	2.1		09/18/18 22:35	127-18-4	
1,1,1-Trichloroethane	**1.9**	ug/m3	0.12	2.1		09/18/18 22:35	71-55-6	
Trichloroethene	**8.6**	ug/m3	0.11	2.1		09/18/18 22:35	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/18/18 22:35	75-01-4	

09/24/18

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH 250042 **Lab ID: 10447804004** Collected: 09/15/18 09:03 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.088	2.15		09/18/18 15:29	75-34-3	
1,2-Dichloroethane	**0.12**	ug/m3	0.088	2.15		09/18/18 15:29	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.087	2.15		09/18/18 15:29	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.087	2.15		09/18/18 15:29	156-60-5	
Methylene Chloride	**11.5**	ug/m3	7.6	2.15		09/18/18 15:29	75-09-2	
Tetrachloroethene	**0.51**	ug/m3	0.15	2.15		09/18/18 15:29	127-18-4	
1,1,1-Trichloroethane	ND	ug/m3	0.12	2.15		09/18/18 15:29	71-55-6	
Trichloroethene	**0.39**	ug/m3	0.12	2.15		09/18/18 15:29	79-01-6	
Vinyl chloride	ND	ug/m3	0.056	2.15		09/18/18 15:29	75-01-4	

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH 250043 **Lab ID: 10447804005** Collected: 09/15/18 08:36 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.083	2.02		09/18/18 17:08	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.083	2.02		09/18/18 17:08	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.081	2.02		09/18/18 17:08	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.081	2.02		09/18/18 17:08	156-60-5	
Methylene Chloride	**8.9**	ug/m3	7.1	2.02		09/18/18 17:08	75-09-2	
Tetrachloroethene	**0.34**	ug/m3	0.14	2.02		09/18/18 17:08	127-18-4	
1,1,1-Trichloroethane	ND	ug/m3	0.11	2.02		09/18/18 17:08	71-55-6	
Trichloroethene	**0.24**	ug/m3	0.11	2.02		09/18/18 17:08	79-01-6	
Vinyl chloride	ND	ug/m3	0.053	2.02		09/18/18 17:08	75-01-4	

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH 250051 8 Hour **Lab ID: 10447804006** Collected: 09/14/18 18:44 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**1.6**	ug/m3	0.077	1.87		09/18/18 19:18	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.077	1.87		09/18/18 19:18	107-06-2	
cis-1,2-Dichloroethene	**27.8**	ug/m3	0.075	1.87		09/18/18 19:18	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.075	1.87		09/18/18 19:18	156-60-5	
Methylene Chloride	**16.1**	ug/m3	6.6	1.87		09/18/18 19:18	75-09-2	
Tetrachloroethene	**255**	ug/m3	0.13	1.87		09/18/18 19:18	127-18-4	
1,1,1-Trichloroethane	**13.0**	ug/m3	0.10	1.87		09/18/18 19:18	71-55-6	
Trichloroethene	**47.0**	ug/m3	0.10	1.87		09/18/18 19:18	79-01-6	
Vinyl chloride	ND	ug/m3	0.049	1.87		09/18/18 19:18	75-01-4	

SL 09/24/18

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH 250070 **Lab ID: 10447804007** Collected: 09/15/18 10:37 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 16:02	75-34-3	
1,2-Dichloroethane	**0.18**	ug/m3	0.086	2.1		09/18/18 16:02	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 16:02	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 16:02	156-60-5	
Methylene Chloride	**14.7**	ug/m3	7.4	2.1		09/18/18 16:02	75-09-2	
Tetrachloroethene	**3.9**	ug/m3	0.14	2.1		09/18/18 16:02	127-18-4	
1,1,1-Trichloroethane	**0.49**	ug/m3	0.12	2.1		09/18/18 16:02	71-55-6	
Trichloroethene	**1.1**	ug/m3	0.11	2.1		09/18/18 16:02	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/18/18 16:02	75-01-4	

9/20/18

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH 250071 **Lab ID: 10447804008** Collected: 09/15/18 10:14 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 16:35	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 16:35	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 16:35	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 16:35	156-60-5	
Methylene Chloride	**10.8**	ug/m3	7.4	2.1		09/18/18 16:35	75-09-2	
Tetrachloroethene	**0.26**	ug/m3	0.14	2.1		09/18/18 16:35	127-18-4	
1,1,1-Trichloroethane	**0.12**	ug/m3	0.12	2.1		09/18/18 16:35	71-55-6	
Trichloroethene	**0.15**	ug/m3	0.11	2.1		09/18/18 16:35	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/18/18 16:35	75-01-4	

RC 09/24/18

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH 250072 **Lab ID: 10447804009** Collected: 09/15/18 09:51 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.085	2.06		09/18/18 17:40	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.085	2.06		09/18/18 17:40	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.083	2.06		09/18/18 17:40	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.083	2.06		09/18/18 17:40	156-60-5	
Methylene Chloride	**11.7**	ug/m3	7.3	2.06		09/18/18 17:40	75-09-2	
Tetrachloroethene	**0.33**	ug/m3	0.14	2.06		09/18/18 17:40	127-18-4	
1,1,1-Trichloroethane	ND	ug/m3	0.11	2.06		09/18/18 17:40	71-55-6	
Trichloroethene	ND	ug/m3	0.11	2.06		09/18/18 17:40	79-01-6	
Vinyl chloride	ND	ug/m3	0.054	2.06		09/18/18 17:40	75-01-4	

09/24/18

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH 250100 **Lab ID: 10447804010** Collected: 09/15/18 11:02 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 18:13	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 18:13	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 18:13	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 18:13	156-60-5	
Methylene Chloride	**14.2**	ug/m3	7.4	2.1		09/18/18 18:13	75-09-2	
Tetrachloroethene	**0.37**	ug/m3	0.14	2.1		09/18/18 18:13	127-18-4	
1,1,1-Trichloroethane	ND	ug/m3	0.12	2.1		09/18/18 18:13	71-55-6	
Trichloroethene	**0.33**	ug/m3	0.11	2.1		09/18/18 18:13	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/18/18 18:13	75-01-4	

09/24/18

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH 250120 **Lab ID: 10447804011** Collected: 09/15/18 11:25 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	**0.097**	ug/m3	0.088	2.15		09/18/18 14:56	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.088	2.15		09/18/18 14:56	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.087	2.15		09/18/18 14:56	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.087	2.15		09/18/18 14:56	156-60-5	
Methylene Chloride	**63.4**	ug/m3	7.6	2.15		09/18/18 14:56	75-09-2	
Tetrachloroethene	**3.9**	ug/m3	0.15	2.15		09/18/18 14:56	127-18-4	
1,1,1-Trichloroethane	**1.2**	ug/m3	0.12	2.15		09/18/18 14:56	71-55-6	
Trichloroethene	**1.1**	ug/m3	0.12	2.15		09/18/18 14:56	79-01-6	
Vinyl chloride	ND	ug/m3	0.056	2.15		09/18/18 14:56	75-01-4	

R 09/24/18

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH 250130 **Lab ID: 10447804012** Collected: 09/15/18 11:48 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 18:46	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 18:46	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 18:46	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 18:46	156-60-5	
Methylene Chloride	**13.1**	ug/m3	7.4	2.1		09/18/18 18:46	75-09-2	
Tetrachloroethene	**0.47**	ug/m3	0.14	2.1		09/18/18 18:46	127-18-4	
1,1,1-Trichloroethane	**3.1**	ug/m3	0.12	2.1		09/18/18 18:46	71-55-6	
Trichloroethene	ND	ug/m3	0.11	2.1		09/18/18 18:46	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/18/18 18:46	75-01-4	

09/26/18

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH SS-North **Lab ID: 10447804013** Collected: 09/17/18 09:21 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 21:29	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.086	2.1		09/18/18 21:29	107-06-2	
cis-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 21:29	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.085	2.1		09/18/18 21:29	156-60-5	
Methylene Chloride	**10.3**	ug/m3	7.4	2.1		09/18/18 21:29	75-09-2	
Tetrachloroethene	**22.9**	ug/m3	0.14	2.1		09/18/18 21:29	127-18-4	
1,1,1-Trichloroethane	**0.60**	ug/m3	0.12	2.1		09/18/18 21:29	71-55-6	
Trichloroethene	**1.8**	ug/m3	0.11	2.1		09/18/18 21:29	79-01-6	
Vinyl chloride	ND	ug/m3	0.055	2.1		09/18/18 21:29	75-01-4	

09/18

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ANALYTICAL RESULTS

Project: IN AMP 18.01 Former Amphenol
Pace Project No.: 10447804

Sample: MH SS-South **Lab ID: 10447804014** Collected: 09/17/18 09:45 Received: 09/18/18 10:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR SIM SCAN	Analytical Method: TO-15							
1,1-Dichloroethane	ND	ug/m3	0.088	2.15		09/18/18 22:02	75-34-3	
1,2-Dichloroethane	ND	ug/m3	0.088	2.15		09/18/18 22:02	107-06-2	
cis-1,2-Dichloroethene	**0.11**	ug/m3	0.087	2.15		09/18/18 22:02	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	0.087	2.15		09/18/18 22:02	156-60-5	
Methylene Chloride	**11.6**	ug/m3	7.6	2.15		09/18/18 22:02	75-09-2	
Tetrachloroethene	**32.9**	ug/m3	0.15	2.15		09/18/18 22:02	127-18-4	
1,1,1-Trichloroethane	**0.63**	ug/m3	0.12	2.15		09/18/18 22:02	71-55-6	
Trichloroethene	**2.1**	ug/m3	0.12	2.15		09/18/18 22:02	79-01-6	
Vinyl chloride	ND	ug/m3	0.056	2.15		09/18/18 22:02	75-01-4	

SC 092418

REPORT OF LABORATORY ANALYSIS

LDC #: 43160B48 **VALIDATION COMPLETENESS WORKSHEET** Date: 9/20/18
SDG #: 10447804 Level III/IV Page: 1 of 2
Laboratory: Pace Analytical Services, LLC Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA Method TO-15) / TO-15 SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	1st %RSD ≤ 30 ICV ≤ 30 CCV ≤ 30
IV.	Continuing calibration	A	
V.	Laboratory Blanks/Canister Blanks per canister	A / A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates / DUP	N / A	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet ** Level IV; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	MH SS-East 1 ** (E, N, AA, S - full scan)	10447804001	Air	09/17/18
2	MH SS-East 2	10447804002	Air	09/17/18
3	MH 250041	10447804003	Air	09/15/18
4	MH 250042	10447804004	Air	09/15/18
5	MH 250043	10447804005	Air	09/15/18
6	MH 250051 8 Hour	10447804006	Air	09/14/18
7	MH 250070	10447804007	Air	09/15/18
8	MH 250071	10447804008	Air	09/15/18
9	MH 250072	10447804009	Air	09/15/18
10	MH 250100	10447804010	Air	09/15/18
11	MH 250120	10447804011	Air	09/15/18
12	MH 250130	10447804012	Air	09/15/18
13	MH SS-North	10447804013	Air	09/17/18

LDC #: 43160B48 **VALIDATION COMPLETENESS WORKSHEET** Date: 9/20/18
SDG #: 10447804 Level III Page: 2 of 2
Laboratory: Pace Analytical Services, LLC Reviewer:
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA Method TO-15)

	Client ID	Lab ID	Matrix	Date
14	MH SS-South	10447804014	Air	09/17/18
15	MH 250051 8 HourDUP	10447804006DUP	Air	09/14/18
16				
17				
18				
19				
20				

Notes:

	305B152 MB						

LDC #: 43160P48

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Volatiles (EPA Method TO-15)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was canister pressure criteria met?	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 24 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30%?	✓			
IIIb. Initial calibration verificattion				
Was an initial calibration verification standard analyzed after every ICAL for each instrument?	✓			
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 24 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 30% or percent recoveries (%R) 70-130%?	✓			
V. Laboratory Blanks/Canister Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed at least once every 24 hours for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
Was a canister blank analyzed for every canister?	✓			
Was there contamination in the canister blanks? If yes, please see the Canister Blanks validation completeness worksheet.		✓		
VI. Field Blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	
VII. Surrogate spikes (Optional)				
Were all surrogate percent recoveries (%R) within QC limits?		✓		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VIII. Laboratory Duplicate				
Was a laboratory duplicate analyzed for this SDG?	✓			
Were the relative percent differences (RPD) within the QC limits?	✓			

LDC #: 43160346

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Internal standards				
Were internal standard area counts within ± 40% from the associated calibration standard?	✓			
Were retention times within ± 20.0 seconds from the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC#: 43160B45
SDG#:

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: FT
2nd Reviewer:

Method: TO15 SIM

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
9/16/2018	TO15 SIM	1,2 Dichloroethane	1	0.000326358	0.0005
			2	0.000448966	0.001
			3	0.001088638	0.002
			4	0.002757794	0.005
			5	0.005762472	0.01
			6	0.011398068	0.02
			7	0.017350489	0.03

Regression Output		***Reported***
Constant	*-0.000072*	*-0.000070*
Std Err of Y Est		
R Squared	*0.999858*	*0.999860*
Degrees of Freedom		
X Coefficient(s)	*0.578656*	*0.578660*
Std Err of Coef.		
Correlation Coefficient	*0.999929*	
Coefficient of Determination (r^2)	*0.999858*	*0.999860*

LDC#: 43160B48
SDG#:

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: EB
2nd Reviewer: [illegible]

Method: TO15 SIM

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
9/17/2018	TO15 Full scan	Tetrachloroethane	1	0.001809459	0.01
			2	0.013576014	0.02
			3	0.036674865	0.05
			4	0.071317876	0.10
			5	0.656550255	1.00
			6	1.318336362	2.00
			7	1.936396078	3.00

Regression Output		***Reported***
Constant	*0.003800*	*0.000840*
Std Err of Y Est		
R Squared	*0.999838*	*0.999950*
Degrees of Freedom		
X Coefficient(s)	*0.648554*	*0.658250*
Std Err of Coef.		
Correlation Coefficient	*0.999919*	
Coefficient of Determination (r^2)	*0.999838*	*0.999950*

LDC #: 43160B48

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA Method TO-15)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (1.0 std)	Recalculated RRF (1.0 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL full scan	9/17/18	QQQ	0.34341	0.34341	0.30365	0.30365	24.10859	24.1086
2	ICAL Full scan	9/13/18	S	0.56299	0.56299	0.52337	052337	9.98568	9.98568
			AA'	1.03615	1.03615	0.92696	092676	14.46210	14.46210
3									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43160B48

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: TP
2nd Reviewer:

METHOD: GC/MS VOA (EPA TO-15)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	26102	9/16/18	L (1st internal standard)	0.100	0.09621	0.09617	3.79158	3.82965
	SIM		(2nd internal standard)					
			(3rd internal standard)					
2	26103	9/18/18	S (1st internal standard)	10.0	10.07125	10.07127	0.71252	0.71269
			AA (2nd internal standard)	↓	10.52063	10.55747	5.20627	5.57468
			(3rd internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43160248

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA Method TO-15)

(Y) N N/A Were all reported results recalculated and verified for all level IV samples?
(Y) N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 1, SIM (Full scan)

Conc = $\left(\left(\frac{9276}{175042}\right) + 0.00227\right)\frac{(10)(2.1)}{(0.42315)}$

= (2.67926 ppbv)(131/24)

= 14.6 ug/m3

#	Sample ID	Compound	Reported Concentration (ug/m3)	Calculated Concentration (ug/m3)	Qualification
	1	S (Full scan)	14.6	14.6	-
		I (SIM)	0.73	0.73	-
	(SIM)	I = ((2655/569491) * - 0.00003)(10)(2.1)/0.55805			
		= 0.17684 ppbv (99/24)			
		= 0.729 ug/m3			